

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (currently amended) An integrated circuit, configured to process microphone signals, where the integrated circuit comprises:

a preamplifier with an amplifier section which has a differential input comprising a first input (+) and a second input (-) and an output (ϕ ; ϕ^*), and with a feedback filter network coupled between the output (ϕ ; ϕ^*) and the second input (-); where the first input (+) to the amplifier section is coupled to an input (ϕ) of the preamplifier for receiving a microphone signal; and where the preamplifier has a frequency-gain transfer function which suppresses low frequencies in a stop band relative to higher frequencies in a pass band; and where the preamplifier is configured to provide a common-mode differential output signal in the stop band and a differential-mode differential output signal in the pass band; and

an analogue-to-digital converter coupled to receive the differential output signal, as an anti-aliasing filtered signal, from the preamplifier and to provide a digital output signal.

2. (original) An integrated circuit according to claim 1, where the preamplifier is configured to provide a differential output signal (ϕ , ϕ^*) by a first and a second amplifier section,

where the preamplifier has a differential mode transfer function which comprises a band-pass characteristic (A_{DM}), and

where the preamplifier comprises a feedback filter network which establishes filter feedback paths (a-b; c-d) which couple outputs to respective inverting inputs of the amplifier sections, and which establishes a filter interconnection path (a-c), which interconnects the inverting inputs.

3. (previously presented) An integrated circuit according to claim 1, where a lower cut-off frequency (F_{P1}) of the filter realized by the preamplifier is located below the lower corner frequency of an audio band.

4. (previously presented) An integrated circuit according to claim 1, where the preamplifier has a differential mode transfer function (A_{DM}) which comprises a band-pass characteristic with an upper cut-off frequency (F_{P3} ; F_{P2}) located below half the sampling frequency (F_S) of the analogue-to-digital converter.

5. (previously presented) An integrated circuit according to claim 1, where the preamplifier has a differential mode transfer function (A_{DM}) which comprises a band-pass characteristic, which has a nominal pass-band ($F_{P1} - F_{P2}$) and a gain plateau band ($F_{Z2} - F_{P3}$), where the nominal pass-band extends over audio band frequencies and where the gain plateau band extends over frequencies above the audio band up to an upper cut-off frequency (F_{P3}).

6. (previously presented) An integrated circuit according to claim 1, where the preamplifier has a common-mode transfer function (A_{CM}) which comprises a low-pass characteristic.

7. (previously presented) An integrated circuit according to claim 1, where the preamplifier has a common-mode transfer function (A_{CM}) which comprises a stop-band characteristic ($F_{Z1}' - ; F_{Z1}' - F_{Z2}'$), and where a flat gain response is provided for low frequencies ($DC - F_{P1}'$).

8. (previously presented) An integrated circuit according to claim 1, where the preamplifier has a common-mode transfer function (A_{CM}) and a differential mode transfer function (A_{DM}) which are configured such that its common-mode gain (A_{CM}) prevails at low frequencies ($DC - F_{P1}'$) whereas its differential mode gain (A_{DM}) prevails at audio band frequencies ($F_{AL} - F_{AU}$).

9. (previously presented) An integrated circuit according to claim 1, where additionally the common-mode gain (A_{CM}) prevails at frequencies above an upper cut-off frequency (F_{P2} , F_{P3}) of the band-pass characteristic.

10. (previously presented) An integrated circuit according to claim 1, where a phase-shifter is cross-coupled between the output of a first amplifier section and an input of a second amplifier section.

11. (previously presented) An integrated circuit according to claim 1, where a phase-shifter is coupled between respective inputs (-) of the respective amplifier sections.

12. (previously presented) An integrated circuit according to claim 1, where the preamplifier comprises a DC off-set circuit integrated with the feedback filter ($Z1$; $Z1, Z1^*, Z2$) to provide a DC shift at the output of the preamplifier.

13. (previously presented) An integrated circuit according to claim 1, comprising a DC off-set circuit integrated with the feedback filter and configured to provide a differential mode DC shift at the output of the preamplifier.

14. (previously presented) An integrated circuit according to claim 1, , where the analogue-to-digital converter comprises a sigma-delta modulator.

15. (original) An integrated circuit according to claim 14, where the sigma-delta modulator comprises a switch-capacitor sampler, which samples the differential signal (φ , φ^*) provided by the preamplifier to provide a single ended input signal for the sigma-delta A/D conversion, and samples a DC voltage level ($V_{Ref\Sigma\Delta}$) such that the single ended input signal is superimposed on the sampled DC voltage level.

16. (original) An integrated circuit according to claim 15, where the sampler comprises a summing amplifier which is an integrated portion of the sampler and the sigma-delta modulator loop.

17. (original) An integrated circuit according to claim 16, where the summing amplifier is provided with an integration error feedback signal of the sigma-delta modulator via a first series capacitor and where the DC voltage level is provided to the summing amplifier via a second series capacitor.

18. (previously presented) An integrated circuit according to claim 1, where the analogue-to-digital converter comprises a sigma-delta modulator, and where a DC off-set voltage level input to the sigma-delta modulator is chosen such that a low-frequent pulse input to and processed by the preamplifier provides idle-mode tones above the audio band.

19. (currently amended) A microphone comprising an integrated circuit as set forth in claim 1 and further comprising any of the above claims and a condenser microphone element configured to provide a microphone signal, responsive to a sound pressure on the microphone element, to the input (ϕ) of the microphone preamplifier.

20. (currently amended) A microphone comprising an integrated circuit as set forth in claim 1 and further comprising any of the above claims and a MEMS microphone element to provide a microphone signal, responsive to a sound pressure on the MEMS microphone element, to the microphone preamplifier.